

NOTES ON THE NATURAL HISTORY OF ALDABRA, ASSUMPTION
AND GLORIOSO ISLANDS, INDIAN OCEAN.

BY

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The atoll of Aldabra lies 220 miles northwest of the north point of Madagascar, in latitude $9^{\circ}25'$ south, and longitude 46° east. It is about 22 miles long by 8 miles in extreme width, the long axis lying east and west.† It is entirely of coral formation, and forms an oval ring of land, broken at several points by channels, and inclosing a lagoon. The ring of dry land is widest at the southeast and northwest corners, where it is nearly 3 miles across. The Grande Terre, or main island, forms three-fifths of the circumference of the ring. It includes (from midway on the western side of the ring) the whole southern and eastern sides to a point on the north shore, being 35 miles long. It is separated by Pass Hourreau, 200 yards wide, from North or Middle Island. This is 12 miles long, forming the north shore as far as Grand Pass. This is the principal opening into the lagoon. It is 400 yards wide, and 8 to 10 fathoms deep. West of this lies Île Picard, or Northwest Island, forming the northwestern corner of the atoll. It is about 5 miles long. Between the south end of Île Picard and the northwest end of Grande Terre, lie half a dozen small islands and as many shallow channels. The lagoon is about 20 miles long and 6 miles in width. Excepting in the northwestern corner near Grand Pass and in a few channels, it is very shallow, half of it being nearly dry at low tide. Grand Pass is the only inlet deep enough to allow the passage of a large vessel, and through this the current runs with great rapidity, 5 to 7 knots, so that it is dangerous for sailing vessels except at the turn of the tides. At Pass Hourreau there is a narrow channel, through which a small vessel might pass. The inner or lagoon shore of the land is everywhere bounded by mangrove swamps, intersected by numerous channels. During the northwest monsoon a heavy swell rolls in through Grand Pass and breaks upon the reef within the lagoon. It is very dangerous to boats at such times, and the pass can not be traversed. There are numerous islands scattered about the lagoon, the longest being Île Sepoy, about 5 miles from Grand Pass and directly opposite to it, and Île Michel, opposite to Pass Hourreau, and close to the southern side

* Edited by Frederick W. True, with the assistance of other curators of the Museum. No identifications of species were included in Dr. Abbott's manuscript.

† The island was completely surveyed by H. M. S. *Alert*, in 1882.

of the lagoon. There are hundreds of other smaller islets, varying in size from a few acres to a few square yards.

The atoll is entirely of coral formation. Darwin, in his "Coral Reefs," relying principally on the reports of Capt. Moresby, did not regard it as a true atoll. The rocks of which it is composed were said to be "vitrified." The rock certainly resembles lava in its outward appearance; but it is easily broken, and the fracture displays a white interior and numerous fossil corals that are in a scarcely altered state. The rock gives a peculiar ringing sound when struck.

The principal difference between Aldabra and other coral islands is, that it seems to be of very ancient formation and has undergone an elevation of 15 to 20 feet. The island is flat, composed almost entirely of naked coral rock, rough and jagged, completely honeycombed in every direction with pits and fissures. Scarcely any soil exists, excepting where a small quantity of rich mold, formed by decomposing coral, has accumulated in hollows of the rock. The sea-face is an overhanging cliff of rock, but in a few places, especially on Île Picard and on the west coast, are sandy beaches and low sand-hills. Upon the south coast are Dune Jean Louis and Dune du Mèche, sand hills, which reach 65 feet above sea level—the highest points in Aldabra.

Nearly the whole surface is covered with a dense, almost impenetrable scrub of tangled bushes. No large trees now exist except the mangroves, which attain a height of 60 feet and a diameter of a foot or more. Formerly some large trees existed, as shown by the decaying stumps and fallen logs, occasionally 2 feet in diameter, still to be found upon Île Picard. In some places the larger mangroves are dead over areas of several acres. The disappearance of the larger trees can only be attributed to a diminution in the rainfall.

The supply of fresh water is very scanty, only obtainable in hollows in the rock, except at one place near the southeast corner of Grande Terre. Here there is a sort of spring, filling a hollow in the rock 6 by 2 feet, and 5 feet deep. This seems to drain a considerable area, as the level of the water can not be appreciably lowered by baling out. The water is of poor quality.

The rainfall is scanty and very irregular. Sometimes many months elapse during which not a drop of rain falls, and, on the other hand, 6 inches have been registered in a single night.

The islets in the lagoon are of very peculiar form, generally more or less mushroom-shaped. The level of their flat summits is a few feet

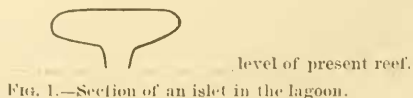


FIG. 1.—Section of an islet in the lagoon.

above that of spring tides. They are evidently the remains of the ancient floor of the lagoon. All the other parts having been cut away by the action of the water, the sides of all are undermined, and the smaller frequently present a very perfect mushroom-shape, as shown

in the accompanying figure. Sometimes the top is 30 feet in diameter, perched upon a support of 5 or 6 feet in thickness.

As before stated, the island is full of pits. These are often 20 to 30 feet in diameter and as many feet deep, and are full of salt water at high tide. Near the western end of the floor of the lagoon is a large hole, through which the water spouts up as the tide rises. This opening doubtless communicates with the sea outside through subterranean passages, and as the tide outside the lagoon is one or two hours in advance of that inside, this phenomenon is easily accounted for.

The currents sweep with great rapidity through the lagoon, especially near the channels, but in some of the calmer corners, particularly in the southwest, the bottom is covered with a layer of fine white mud, similar to that described by Darwin at Keeling atoll.

The average temperature on the island during October was 76° in early morning and 84° during the day. After the monsoon changed, early in December, it became much damper and warmer—up to 90° in the shade at 2 p. m. During October and November we had no rain, the vegetation became quite dried up, and mosquitoes were absent. In December about 15 inches of rain fell; vegetation awakened, nearly every plant put forth fresh green leaves and flowered. A more complete transformation could scarce be imagined. The desert island became a blooming garden filled with the perfume of flowers.

The most remarkable indigenous inhabitant of Aldabra is the gigantic land tortoise,* similar to those of the Galapagos group. They were formerly very abundant, but being easily caught and in great demand for their flesh, their numbers have been greatly diminished by the whalers and fishermen visiting the island. They are now protected (nominally) by the government of Seychelles, to which Aldabra belongs. They are still found upon Grande Terre and Île Nord, probably in considerable numbers, although I met with but few, as many parts of Aldabra are wholly inaccessible, owing to the rugged surface and dense jungle. They were completely exterminated upon Île Picard about twelve years since, but have recently been reintroduced by the present lessee of the island, Mr. James Spurs. At the present day they are more plentiful in the Seychelles than in their original habitat. They were brought many years since to the former islands, where they breed freely in confinement, and are much valued for food, being eaten at marriage feasts and on other festive occasions. It is the only remaining species of the gigantic land-tortoises that formerly inhabited Bourbon, Mauritius, and Rodriguez (and probably also Madagasear) at the time of their discovery. A single individual, probably of the Rodriguez species, still lives at Fort George Barracks, in Mauritius. The greatest enemy of the land tortoise is the common rat, which swarms upon Aldabra and eats the young as soon as they are hatched.

The only other land-reptiles upon Aldabra are a small lizard (*Able-*

* Probably *Testudo elephantina*. F. A. L.

pharus pectilopleurus) and two geckos (*Hemidactylus mabouia* and *Phelsuma abbotti**).

Turtles are plentiful. Many thousands annually ascend the sandy beaches to deposit their eggs. Tortoise-shell was formerly gathered in large quantities, but this fishery has been overworked and large "carró" are now scarce.

Mammals are represented by a large fruit bat (*Pteropus aldabrensis*, True), and two smaller bats.† Rats (*Mus decumanus*), probably from wrecked vessels, swarm everywhere, and are very destructive. Cats, probably from the same source, are common upon Grande Terre, where they have completely exterminated the flightless rail.

Land-birds are represented by fourteen resident and six accidental or visiting species; water-birds by twenty-four species. Doubtless many more occasionally visit the island from Madagascar and Africa.

The most interesting species of birds is the curious flightless rail (*Rougetius aldabranus*, Ridgway), the sole survivor of the numerous flightless birds that inhabited the Mascarine Islands at the time of their discovery. I fear the present species must follow their example, as their arch enemy, the cat, has already exterminated them from Grande Terre, and must sooner or later reach the other smaller islands of the group, where the rails as yet abound in great numbers. The other land-birds are apparently similar to, or identical with, Madagascar species.

Boobies of several species,‡ frigates (*Fregata aquila minor*), and various species of terns§ and sandpipers, abound.

A flamingo (*Phaenicopterus erythraeus*?) is found in considerable numbers. This is particularly interesting as having also existed in Mauritius at time of its discovery.

Fish are not very plentiful in the neighborhood of the islands. Huge cocoanut-crabs (lobsters) abound, as also land-crabs.

Insects are not numerous either in species or individuals. Six or seven butterflies, a few moths, a dragonfly, a few beetles, some flies, and bees are found.|| Mosquitoes abound

* New species described by Mr. Stejneger.

† One of these is *Nyctinomus pumilus*. F. W. T.

‡ Only *Sula piscator* (Linn.) is represented in the collection made by Dr. Abbott.—R. R.

§ *Sterna bernsteini*, *S. fuliginosa*, *S. melanauca*, *Anous stolidus* and *Gygis alba*.—R. R.

|| Mr. Linell furnishes the following list of Aldabra insects received from Dr. Abbott:

Butterflies:

1. *Diadema misippus*, L. Both sexes taken; ♂, black with violet-shot white spots; ♀, brown with black and white wing-tips, closely imitating *Danaus chrysippus*. The distribution of this species is remarkable. It is rare in America from South Florida through the West Indies to the Amazon region; more common in Africa (except the Mediterranean region) and through Southern Asia and the Malay Archipelago to New Holland.
2. *Junonia elia*, Cram. Common in South and East Africa.

The islands are covered with dense scrub, mostly composed of shrubs 4 to 8 feet high. No large trees except mangroves now exist, and small plants are remarkably scarce. There are no ferns or orchids, but considerable quantities of *Orechilla* moss are gathered. Formerly "porché" and "bois rose" grew to considerable size, judging from the decaying stumps and logs. A few cocoanut trees exist, mostly upon Île Michel.

Aldabra is not permanently inhabited, but there are usually a few fishermen from Seychelles living there. The whole Aldabra group, including Aldabra, Astove, Assumption, and Cosmoledo, belongs to the British colony of Seychelles, and is leased by the Government for the turtle and tortoise-shell fishery.

ASSUMPTION ISLAND.

Assumption lies 20 miles southeast of Aldabra and is about 5 miles long by $1\frac{1}{2}$ miles wide. In its physical features it is much like Aldabra, but its surface is smoother and it is not so densely covered with scrub. A considerable part of the surface is covered with "champignon," as the rugged fossil coral rock of Aldabra is called. There are two large sand dunes upon the eastern shore, about 70 feet high, which are visible from a considerable distance. No fresh water exists, unless just after a rain, when a little collects in hollows in the rock. The animal life and vegetation is similar to that of Aldabra. The little flightless rail (*Rougetius abbotti*, Ridgway)* abounds, as well as most of the other land-birds found upon the latter island. Numbers of goats run wild, having been introduced many years since from Europa Island (in Mozambique Channel).

GLORIOSO ISLAND.

Glorioso Island lies about 90 miles west-northwest of the north point of Madagascar (Cape Amber), and 120 southeast of Aldabra. It is

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3. *Lycana telicanus*, Hübn. South Europe through East Africa to the Cape of Good Hope.

Dragonfly:

1. *Pantala flavescens*, Fab. A common East African species.

Myrmeleon. *Myrmeleon*, sp.

Mantid:

1. *Polyspilota variegata*, Oliv. An East African species.

Beetles:

1. *Oxythyrea amabilis*, Schönh.; var. Smaller than the continental forms.
2. Small scarabæid—undetermined.
3. Small longicorn—undetermined.

Wasps:

1. *Sphex*, sp.
2. *Monedula*, sp.

Other diptera:

- Odontomyia*, sp.

F. W. T.

* A different species from that of Aldabra, described in *The Auk*, for January, 1894.—R. R.

situated upon the south end of the Glorioso bank. The bank is about 8 miles long by 2 in width. Île du Lise lies at the north end of the bank.

Glorioso Island contains about 700 acres, being $1\frac{1}{3}$ miles long by 1 mile wide. It is partly covered with sand hills 50 to 60 feet high. Formerly it was almost entirely covered with a growth of "porché," "bois rose," "fouche" and other large trees, but at present many have been cut down. The soil is unusually fertile for an oceanic island, having been manured for ages by thousands of sea-birds. "Champignon," or fossil—coral rock, such as composes Aldabra, Cosmoledo, etc., exists in only a few spots, and the soil or sand is of fair depth. Large quantities of maize are grown. Water from wells is of poor quality. There are five species of land-birds, three of which, a sun bird,* *Zosterops*,† and a bulbul‡ are probably peculiar.

Common fowls run wild in the jungle in considerable numbers. They are very shy and not easy to shoot. Among sea-birds there is a booby, which seems to be peculiar to the island.§ They breed in large numbers upon the "fouche" trees, in company with frigates and common boobies.

Upon the neighboring small islet of Lise vast numbers of "Wide-awake" terns (*Sterna fuliginosa*) breed, together with "General" and "Capucin" boobies (*Sula cyanops* and *S. piscator*). A gecko (*Hemidactylus mabouia*) and two other lizards, (*Ablepharus gloriosus* Stejneger, *Zonosaurus madagascariensis*) are plentiful. Numbers of wild cats range the jungle, so that birds are far less numerous, individually, than in Aldabra.

* *Cinnyris souimanga*.

† *Z. madagascariensis*.

‡ *Ircincla madagascariensis*?

§ Two species of boobies were collected by Dr. Abbott, *Sula cyanops* and *S. piscator*, but both of these are of very wide distribution.—R. R.